

SAFETY AND SECURITY *FIRST*:

**Protecting Our Jobs, Families, and Hometowns
From Toxic Chemical Disasters**



**A Report Prepared by the
New Jersey Work Environment Council (WEC)
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This report was written by Jim Young, former Special Projects Director of the New Jersey Work Environment Council (WEC) and currently Senior Staff, The Public Health Institute, Paul Orum, WEC Consultant, Jim Gardner, WEC Public Affairs Coordinator, and Rick Engler, WEC Director. Additional research and data analysis for this report was conducted by Debra Coyle, WEC Organizer. Financial support for this report was provided by the Bauman Foundation, Beldon Fund, Educational Foundation of America, French American Charitable Trust and the Fund for New Jersey.

The New Jersey Work Environment Council is an alliance of 70 labor, community, and environmental organizations working together for safe, secure jobs, and a healthy, sustainable environment. WEC links workers, communities, and environmentalists through training, technical assistance, grassroots organizing, and public policy campaigns to promote dialogue, collaboration, and joint action.

For more information, contact:

Rick Engler, Director
New Jersey Work Environment Council
142 West State Street - Third Floor, Trenton, NJ 08608-1102
Telephone: (609) 695-7100 Main Office Fax: (609) 695-4200
On the Web: www.njwec.org
Email: info@njwec.org

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1. SUMMARY

New Jersey's chemical industry is widely acknowledged to be at risk of disasters triggered by both accidents and by deliberate terrorist attacks. According to state and federal records, there are currently 110 industrial facilities in our state that pose catastrophic safety and health risks to workers or the public in the event of a worst-case chemical release. These operations include chemical plants, oil refineries, sewage and water treatment works, and food processing facilities.

The New Jersey Work Environment Council (WEC) urges these facilities and state and federal regulators to reduce these dangers where feasible and to properly secure chemical hazards that cannot be readily diminished or eliminated.

To prepare this report, WEC visited federal and state reading-rooms to review reports about "worst case" hazards filed by facility management with the federal government and/or the state of New Jersey. Previous studies focused solely on information obtained from federal databases, without any examination of state data.

Safety and Security First: Protecting Our Jobs, Families, and Hometowns From Toxic Chemical Disasters, utilizes data reported by facility management to the New Jersey Department of Environmental Protection (DEP) under the state's *Toxic Catastrophe Prevention Act* (TCPA) program. It also uses data reported by facility management to the U.S. Environmental Protection Agency (EPA) under the federal *Clean Air Act* (CAA) Section 112 (r).

Both the TCPA and CAA require plants that use large quantities of *extraordinarily hazardous substances* to develop comprehensive Risk Management Plans (RMPs).¹ RMPs are designed to protect workers and the community by preventing catastrophic toxic and flammable releases. They cover standard operating procedures, safety reviews, preventive maintenance, operator training, accident investigation, risk assessment, emergency response, and management of changing conditions. Every five years management must evaluate whether their processes are at a "state of the art" level for preventing chemical accidents.

Both TCPA and CAA Section 112 (r) also require the information contained in RMPs to be available to the public. Prior to September 11, 2001, much of this information was available on-line. Since then, however, interested parties must visit federal or state

¹ TCPA covers facilities if they handle, use, manufacture, store or have the capability of generating an "extraordinarily" hazardous substance at certain specified quantities. For a list of these substances, see <http://www.nj.gov/dep/enforcement/relprev/tcpa/ehslist.htm>. CAA Section 112 (r) covers a very similar, though slightly different universe of facilities using "extremely" hazardous substances. For a list of these substances, see EPA, Office of Solid Waste and Emergency Response. *List of Lists: Consolidated List of Chemicals Subject to the Emergency Planning and Community Right-To-Know Act (EPCRA) and Section 112(r) of the Clean Air Act: CEPCRA Section 302 Extremely Hazardous Substances*. <http://www.epa.gov/ceppo/pubs/title3.pdf>.

“reading rooms” to review RMPs. This report is based on an analysis conducted on-site at state and federal reading rooms.²

The following are key points from WEC’s analysis:

- **There are six facilities in New Jersey at which a worst-case release of toxic chemicals could cause serious injury or death to more than one million people living in the area.** These facilities include chemical manufacturers, an oil refinery, and a paper mill.

A worst-case chemical release from the most hazardous of these facilities, located in Hudson County, could harm up to an estimated 12 million people in New Jersey *and large portions of New York City*. Another facility, located in Salem County, reported that a potential release could harm as many as two million residents *and extend 25 miles into downtown Philadelphia*.

- **There are 15 facilities in New Jersey at which a worst-case release of toxic chemicals could cause serious injury or death to more than 100,000 people living in the area.** These facilities are located in Gloucester, Hudson, Middlesex, Salem, and Union counties.
- **The most dangerous chemicals reported by New Jersey’s top 15 high-hazard facilities are chlorine, hydrofluoric acid, anhydrous ammonia, hydrochloric acid, ethylene oxide, titanium tetrachloride, thionyl chloride, and vinyl acetate monomer.** Each of these toxic chemicals, under certain conditions, can form a highly hazardous toxic cloud that can drift downwind, enveloping neighborhoods, schools, hospitals, adjacent industrial facilities, or other public areas. Five of the top six facilities report chlorine gas as their most acutely hazardous chemical.
- **New Jersey has dramatically reduced chemical hazards at wastewater and water treatment facilities.** Among the top 15 high-hazard facilities in New Jersey, *none* are publicly owned wastewater or water treatment facilities. As a result of the state’s TCPA program, almost all 290 wastewater treatment facilities in New Jersey that reported using chlorine gas when the program began in 1988 have since eliminated or significantly reduced their chlorine use.
- **Among New Jersey facilities regulated by TCPA – but not by the federal *Clean Air Act* – only one reported that more than 100,000 people live in an area where a worst-case release could cause serious injury or death.** This facility, located in Union County, reported a release that could potentially harm any of 200,000 people.

New Jersey residents and workers have reason to be wary about the chemicals that surround us. Despite serious efforts of some management – particularly in the public

² For this report, WEC visited federal Reading Rooms as well as a Reading Room opened in October 2005 at the DEP’s TCPA program offices in Trenton.

sector – to reduce risks from both intentional and unintentional incidents, this WEC report shows millions of residents and workers remain at risk from a worst-case toxic release.

In light of these findings, WEC urges the state to adopt a program emphasizing *safety and security first* and significantly reducing chemical hazards where there are readily available alternatives, backed by strict physical security and safety standards where hazards cannot be significantly reduced or eliminated. We are better off safe than sorry.

WEC concludes that mandatory standards are the best way to ensure chemical safety and hometown security. However, more than five years have passed since September 11, 2001, and there are still no adequate federal or state requirements to address this threat.

While New Jersey has taken some useful first steps, additional mandatory safety and security standards are urgently needed.

During his campaign for Governor, Jon Corzine said, “Without basic safety and security, everything else we care about is at risk.” WEC thanks Governor Corzine for his pledge to put *Safety and Security First* and urges him to act promptly to ensure chemical safety and hometown security.

2. FINDINGS: FACILITIES POSING “WORST CASE THREATS”

The findings in this report make clear that the threat of a catastrophic chemical release is not an academic problem. It is very real, documented by facility management and government agencies, and it could happen in locations throughout New Jersey.

- There are six facilities in New Jersey at which **more than one million people live in the potential path of a worst-case toxic chemical release.** These facilities include chemical manufacturers, an oil refinery, and a paper mill.
- A worst-case chemical release from the most potentially hazardous of these facilities, Kuehne Chemical Co., Inc. in South Kearney, could cause serious harm in an area of an estimated *12 million people* in New Jersey and portions of New York City. This facility uses large amounts of chlorine, and is a particular risk because of its location in heavily populated South Kearney, near the border of Newark. A chlorine release at Kuehne could impact a radius extending into Manhattan, Staten Island and Brooklyn, as well as into the Northern New Jersey counties of Hudson, Essex, Union and Passaic.
- New York City is not the only major metropolitan area at risk. Philadelphia is well within the worst-case scenario radius of a potential release of chlorine from the DuPont Chambers Works in Deepwater, Salem County. According to the company, such a release could harm any of two million residents within 25 miles extending into downtown Philadelphia.

New Jersey's high population density puts a large number of people at potential risk from an intentional (e.g. terrorist attack) or unintentional (e.g. explosion) toxic incident. New Jersey is the most densely populated state in the country, nestled between New York City and Philadelphia, and has one of the highest ratios of toxic facilities per square mile in the nation.^{3, 4}

A total of 15 facilities in New Jersey could harm any of 100,000 or more residents in the event of a worst-case chemical release. These facilities are in Essex, Gloucester, Hudson, Middlesex, Salem, and Union counties.

Note on Disclosure of Information

In this report, WEC decided to disclose the names of facilities using or storing specific extraordinarily hazardous chemicals and to disclose the names of municipalities where these facilities are located. Since September 11, 2001, much of this information, which was previously available to workers and the public via the Internet, was withdrawn and made available only in public reading rooms. Risk Management Plans (RMPs), which form the basis of this report, were among the first documents withdrawn from the Internet.

³ US Census Bureau

⁴ Toxic Release Inventory, US EPA. Note that this statistic is based on 2004 reports under the TRI Program, which covers 524 New Jersey facilities.

Industry argues that information in RMPs, if made public, can be used by terrorists. However, WEC maintains that RMPs, along with other data available under federal and state right-to-know laws, are intended to improve the safety of or help protect workplaces and communities not only from terrorism, but from “unintentional” incidents – the chemical releases, fires and explosions that each year claim hundreds of lives across the country.

WEC’s disclosure of chemical dangers is limited to the facilities’ potential harm to surrounding communities and does not include information about any specific security vulnerability or how to cause a chemical release. WEC believes that this report can help to save lives. Attempting to hide data about potential risks will not succeed nor will it make those risks go away. Industrial-scale chemical hazards – including rail cars transporting chemicals – cannot be hidden. As Sidney J. Casperson, former director of the state’s New Jersey’s Office of Counterterrorism said, there is greater risk in remaining silent and failing to fix the problem. According to Casperson: “The terrorists already know what’s out here. They have been found with blueprints of our buildings, and a lot of the information is available over the Internet or at a public library. **The only question is whether we will find a way to protect these targets before they find a way to attack them.**” (*New York Times*, May 9, 2005)

WEC decided to make this information public after careful deliberation. Our decision was bolstered by WEC’s October 2005 survey of 65 emergency responders and health officers. The survey revealed an alarming lack of understanding about toxic risks in New Jersey communities – and a startling lack of awareness among emergency responders about the state’s *Toxic Catastrophe Prevention Act (TCPA)*. In short, we are woefully unprepared for a chemical catastrophe.

When asked whether “the majority of residents know what steps to take to protect themselves (e.g., evacuation) if there is “a chemical accident in your municipality,” 55 of 65 respondents (85 percent) said “No.” In addition, 50 percent of respondents – many of whom are professionals charged with responding to emergencies – were unfamiliar with provisions of TCPA; and 63 percent had no idea whether there was a facility covered by TCPA in their municipality.

TABLE I "WORST CASE" POTENTIAL OF FACILITIES IN NEW JERSEY

The following table ranks New Jersey facilities by the population living within the area where a worst-case toxic or flammable release could cause death or serious injury.⁵

Facility Name	Location	Chemical of Concern	Danger Zone (Miles)	Population in Danger Zone
Kuehne Chemical Co., Inc.	South Kearny	Chlorine	14.00	12,000,000
Infineum USA L.P.	Linden	Chlorine	14.00	4,200,000
Solvay Solexis, Inc.	Thorofare	Chlorine	25.00	4,165,831
Valero Refining Co.	Paulsboro	Hydrofluoric acid (concentration 50% or greater)	19.00	3,170,000
DuPont Chambers Works	Deepwater	Chlorine	25.00	2,000,000
Shweitzer-Mauduit International, Inc.	Spotswood	Chlorine	14.00	1,100,000
DuPont Performance Elastomers - Chambers Works	Deepwater	Hydrochloric acid	13.00	500,000
New York Terminals, LLC	Elizabeth	Ammonia (anhydrous)	5.00	485,000
Hercules Incorporated	Parlin	Ethylene oxide	7.80	410,000
Akzo Nobel Polymer Chemicals LLC	Edison	Titanium tetrachloride	6.20	404,046
Ferro	Bridgeport	Chlorine	7.50	240,000
* Merck & Co., Inc.	Rahway	Thionyl chloride	4.50	200,000
Bayonne Plant Holding, L.L.C.	Bayonne	Ammonia (anhydrous)	2.13	112,728
Air Products Polymers, L.P.	Dayton	Vinyl acetate monomer	5.60	112,255
Repauno Products, LLC	Gibbstown	Ammonia (anhydrous)	4.40	110,000
Farmland Dairies, LLC	Wallington	Ammonia (anhydrous)	1.20	54,000
Mallinckrodt Baker, Inc.	Phillipsburg	Ammonia (anhydrous)	2.30	52,535
General Chemical	Newark	Oleum (Fuming Sulfuric acid)	2.00	48,218
AGC Chemicals Americas, Inc.	Bayonne	Ammonia (anhydrous)	1.40	43,200
City of Trenton Water Works	Trenton	Chlorine	1.30	34,963
State Metal Industries, Inc.	Camden	Chlorine	1.30	34,104
* Siegfried (USA), Inc.	Pennsville	Thionyl chloride	3.60	31,663
Carl J. Olsen Water Treatment Plant	Edison	Chlorine	1.30	27,000
Tropicana Northeast Operations	Jersey City	Ammonia (anhydrous)	0.97	20,000
Conoco-Phillips	Linden	Flammable Mixture	1.40	18,000
Nestle USA - Beverage Division, Inc.	Freehold	Ammonia (anhydrous)	1.50	17,000
Wildwood/Lower Region	Rio Grande	Chlorine	3.00	16,621
CVC Specialty Chemicals, Inc.	Maple Shade	Epichlorohydrin	2.20	14,100
Jumping Brook Water Treatment Plant	Neptune	Chlorine	1.30	12,400
BASF Corporation	Washington	Ethylene oxide	2.53	12,000
Delaware River Regional Water Treatment Plant	Delran	Chlorine	1.30	12,000

⁵ Danger zone figures are not forecasts of casualties. Not everyone in the danger zone could likely be harmed in the event of a worst-case release.

Bridor USA	Vineland	Ammonia (anhydrous)	2.60	11,639
* E.I. DuPont Morse Mill Sulfuric Acid Plant	Linden	Sulfur trioxide	1.39	10,400
Sunoco Eagle Point Refinery	Westville	Chlorine	1.33	10,230
Scott Specialty Gases	South Plainfield	Chlorine	1.30	10,160
Grasso Foods, Inc.	Woolwich Township	Ammonia (anhydrous)	3.10	10,000
* Little Falls Water Treatment Plant	Totowa	Ozone (gas)	1.10	10,000
Kinder Morgan	Carteret	Vinyl acetate monomer	0.73	10,000
* Emcore	Somerset	Arsine	1.60	8,400
Garelick Farms	Florence	Ammonia (anhydrous)	1.25	7,463
Lower Gate House	Wanaque	Chlorine	1.30	7,223
* Stepan Company	Fieldsboro	Sulfur trioxide	2.20	7,187
Noveon, Inc.	Pedricktown	Acrylonitrile	3.10	7,100
Johanna Foods, Inc.	Flemington	Ammonia (anhydrous)	1.50	6,893
IMTT (<i>pending TCPA deregistration</i>)	Bayonne	Butane (flammable)	0.43	6,700
Chemical Building/ Filtration Plant	Wanaque	Chlorine	1.30	6,000
Canoe Brook Station	Short Hills	Chlorine	1.30	5,700
* Ocean Spray Cranberries, Inc.	Bordentown	Ammonia (anhydrous)	0.86	5,700
Brick Township Municipal Utilities Authority	Brick	Chlorine	0.90	5,654
Old (Original) Treatment Plant	Wanaque	Chlorine	1.30	5,573
Swimming River Water Treatment Plant	Tinton Falls	Chlorine	1.30	4,800
Old Bridge Chemicals, Inc.	Old Bridge	Ammonia (anhydrous)	1.20	4,497
Camden Water - Morris-Delair Water Treatment Plant	Pennsauken	Chlorine	1.30	4,400
United Water NJ Haworth Water Treatment Plant	Haworth	Ammonia (anhydrous)	0.60	3,760
Fisher Scientific Company L.L.C.	Bridgewater	Chloroform	0.70	3,600
Readington Farms, Inc.	Whitehouse	Ammonia (anhydrous)	1.20	3,137
Johnson Matthey Inc.	West Deptford	Chlorine	1.30	2,900
LaBrea Bakery	Swedesboro	Ammonia (anhydrous)	1.20	2,065
Colorite Specialty Resins	Burlington	Vinyl chloride (flammable)	0.51	1,700
Seabrook Brothers & Sons Inc.	Seabrook	Ammonia (anhydrous)	1.40	1,200
Oxy Vinyls, LP	Pedricktown	Ammonia (anhydrous)	1.80	1,195
Pequannock Water Treatment Plant	West Milford	Chlorine	1.30	1,100
* Spectrum Chemicals & Laboratory Products	New Brunswick	Bromine	0.40	1,000
PolyOne Corporation	Pedricktown	Ammonia (anhydrous)	1.20	950
** Ronson Consumer Products Corporation	Woodbridge Township	Isobutane (flammable)	0.40	800
Casa Di Bertacchi Corporation	Vineland	Ammonia (anhydrous)	0.90	770
Aeropres Corporation	Hillsborough	Butane (flammable)	0.50	700
* McLane Company, Inc.	Carneys Point	Ammonia (anhydrous)	1.30	422
Sandvik Coromant Company	Fair Lawn	Titanium tetrachloride	0.22	422
DuPont	Parlin	Acrylonitrile	0.22	376

** Motiva Enterprises LLC	Sewaren	Butane (flammable)	0.40	265
* Mobil Chemical Company	Edison	Di-tert-butyl peroxide (flammable)	0.45	259
Voltaix, Inc.	Somerset	Diborane	0.46	246
Dow Chemical	Pennsauken	Pentane (flammable)	0.30	174
* Geo Specialty Chemicals	Gibbstown	Cumene hydroperoxide (flammable)	0.21	150
** Hoeganaes Corporation	Cinnaminson	Propane (flammable)	0.39	144
Amerada Hess Corp Refining	Port Reading	Flammable Mixture	0.16	134
* Lubrizol Dock Resins	Linden	Reactive Mixture	0.17	110
Crest Foam Industries Incorporated	Moonachie	Toluene diisocyanate (unspecified isomer)	0.10	84
* Elizabeth Water Company/Canal Road Water Treatment	Somerset	Ozone (gas)	0.50	69
Muralo Company, Inc.	Bayonne	Vinyl acetate monomer	0.10	60
Air Products and Chemicals, Inc.	Paulsboro	Toluene diisocyanate (unspecified isomer)	0.10	52
Cardolite Corporation	Newark	Epichlorohydrin	0.60	46
EMC Packaging, Inc.	Lakewood	Difluoroethane (flammable)	0.23	20
Ashland Specialty Chemical Company	Kearny	Cyclohexylamine	0.07	20
Diversified CPC International, Inc.	Sparta	Isobutane (flammable)	0.42	10
Falcon Safety Products, Inc	Somerville	Difluoroethane (flammable)	0.28	10
** American Spraytech LLC	North Branch	Butane (flammable)	0.20	8
** Crest Foam	Edison	Toluene diisocyanate (unspecified isomer)	0.20	8
VWR International	Bridgeport	Hydrochloric acid (concentration 37% or greater)	0.70	0
** Linden LPG Storage Facility	Linden	Propane (flammable)	0.52	0
** Welco-CGI	Newark	Propane (flammable)	0.40	0
Elan Incorporated	Newark	Ethyl chloride (flammable)	0.30	0
Church & Dwight Company Inc.	Lakewood	Flammable Mixture	0.28	0
** CHEM Fleur	Newark	2-Methylpropene (flammable)	0.25	0
Cogen Technologies	Linden	Ammonia (conc 20% or greater)	0.20	0
Tekni-Plex, Inc. - Somerville	Somerville	Difluoroethane (flammable)	0.20	0
** DSM Nutritional Products, Inc.	Belvidere	Chloroform	0.14	0
Reckitt Benckiser	Belle Mead	Isobutane (flammable)	0.12	0
Benjamin Moore & Company	Newark	Vinyl acetate monomer	0.11	0
Pedricktown Cogeneration Plant	Pedricktown	Ammonia (anhydrous)	0.11	0
PSEG Fossil, LLC - Mercer Generating Station	Hamilton	Ammonia (conc 20% or greater)	0.10	0
Carneys Point Generating Co., L.P.	Carneys Point	Ammonia (conc 20% or greater)	0.09	0
* Royce Associates	Newark	Sodium hydrosulfite (flammable)	0.08	0

Logan Generating Co., L.P.	Swedesboro	Ammonia (conc 20% or greater)	0.07	0
Adco Chemical Company	Newark	Toluene diisocyanate (unspecified isomer)	0.06	0
Ferro Corporation	South Plainfield	Formaldehyde (solution)	0.06	0
National Casein	Riverton	Vinyl acetate monomer	0.05	0
Foamex	East Rutherford	Toluene diisocyanate (unspecified isomer)	0.01	0
** Church & Dwight Co., Inc.	North Brunswick	Flammable Mixture	0.01	0

* Facility regulated under N.J. *Toxic Catastrophe Prevention Act* but not federal *Clean Air Act*.

** Facility regulated under federal *Clean Air Act* but not N.J. *Toxic Catastrophe Prevention Act*.

Two facilities, Ronson Consumer Products and CHEM Fleur, are due to resubmit or deregister in May 2006.

Source: Review of Risk Management Plans (RMPs) filed under Section 112 (r) of the federal *Clean Air Act* as of May 1, 2006, and under the NJ *Toxic Catastrophe Prevention Act* as of May 3, 2006.

TABLE II DISTRIBUTION OF FACILITIES BY COUNTY

Every New Jersey County, with the exception of Atlantic and Morris, has at least one facility regulated by the NJ Toxic Catastrophe Prevention Program or the EPA under *Clean Air Act* Section 112R.

The distribution of these facilities by county is as follows:

Atlantic	0
Bergen	5
Burlington	8
Camden	3
Cape May	1
Cumberland	3
Essex	9
Gloucester	12
Hudson	8
Hunterdon	2
Mercer	2
Middlesex	18
Monmouth	3
Morris	0
Ocean	3
Passaic	5
Salem	9
Somerset	9
Sussex	1
Union	8
Warren	3
Total	112

Source: New Jersey Department of Environmental Protection, Toxic Catastrophe Prevention Program, May 2006

CHLORINE HAZARDS

At five of the top six sites reporting the worst potential toxic releases – all in areas potentially affecting a million or more residents – the most hazardous chemical is chlorine. Chlorine gas poses great potential for harm to human health through acute (short-term) exposure. It is an extremely corrosive gas that can burn skin, eyes, nose, throat, lungs, even teeth – and exposure can be fatal.^{6,7}

Chlorine leaks and fires are a serious safety and health threat to both workers and the public. As a gas, chlorine is stored under pressure and has the potential to leak. Chlorine containers may also explode and release poisonous gases during fires.

This is not merely an abstract problem. On September 30, 2005, a leaking chlorine tank at a pool supply plant in Kearny sent a chlorine plume blowing toward Jersey City, resulting in Hudson County emergency management officials warning residents to stay indoors and roll up their windows. The Pulaski Skyway was shut down and people in cars were told to roll up their windows and shut off their air conditioning. Businesses in the area were evacuated. Fortunately, no one was hospitalized.⁸

Workers and residents near Graniteville, S.C., were not so lucky in January 2005. Nine people were killed and 5,400 were forced to evacuate after a Norfolk Southern train plowed into rail cars parked outside Avondale Mills Inc., a textile mill. The impact opened a 90-ton tanker car filled with chlorine, releasing a toxic cloud that wafted over the town. More than 550 people required hospital care.⁹

New Jersey chemical manufacturers used 185,584,903 pounds of chlorine in 2004, according to the state Department of Environmental Protection.¹⁰ An unknown amount also moved through the state's labyrinth of rail lines – the primary mode of shipping chlorine. Railroads across the country carry about 32,000 carloads a year, according to federal estimates.¹¹

More than any other chemical used in New Jersey, chlorine highlights the dangers of both unintentional (accidental) or intentional (sabotage or terrorism) chemical incidents. But chlorine is also the subject of one of New Jersey's best environmental success stories over the last 17 years. (See box).

⁶ *Massachusetts Chemical Fact Sheet: Chlorine*, Massachusetts Toxics Use Reduction Institute.

⁷ *Hazardous Substance Fact Sheet: Chlorine*, New Jersey Department of Health and Senior Services.

⁸ "Officials Warning of Chlorine Leak Affecting Jersey City Air," Associated Press, September 30, 2005.

⁹ "Chlorine Gas from South Carolina Train Crash Kills Nine," Environmental News Service, January 10, 2005.

¹⁰ EHS Substance Use As Reported on the 2004 Release and Pollution Prevention Report, DEP, 2005.

¹¹ "Cloud of Concern Hangs Over New Jersey," by Alex Nussbaum, *Bergen Record*, January 16, 2005.

NJ'S Toxic Catastrophe Prevention Success Story

Among the top 15 facilities in New Jersey that report the most hazardous potential worst-case scenario chemical releases, *none* are public sector water treatment facilities using chlorine. This fact is a direct result of the state's *Toxic Catastrophe Prevention Act (TCPA)*, enacted in the wake of the 1984 Bhopal, India, chemical disaster that killed thousands. Under TCPA, almost all 290 wastewater treatment facilities in New Jersey that reported using chlorine gas when the program began in 1988 have since eliminated or significantly reduced their use of chlorine gas.

According to the Massachusetts Toxics Use Reduction Institute, alternatives are available for most uses of chlorine. In wastewater treatment, to name one example, sodium hypochlorite, chlorine dioxide, ozone, and ultraviolet light are used to replace chlorine as a water purifier.

Source: "Eliminating Hometown Hazards: Cutting Chemical Risks at Wastewater Treatment Facilities," Environmental Defense, 2003.

FINDING SOLUTIONS

As noted, nearly 290 water utilities in New Jersey have eliminated or significantly reduced chlorine gas under the state's *Toxic Catastrophe Prevention Act*. Some of these facilities formerly had large danger zones – the geographic area where a toxic gas plume could pose serious danger to life and health. For example, the Middlesex County Utilities Authority wastewater treatment facility in Sayreville, N.J., formerly had a danger zone encompassing some 10.7 million people, which was eliminated when the facility switched to liquid bleach disinfection. Manufacturing facilities have made changes as well. Manhattan Products, in Carlstadt, N.J., now produces household cleaning products with liquid aqueous ammonia instead of anhydrous ammonia, removing a threat to 160,000 residents within its former danger zone.¹²

¹² "Preventing Toxic Terrorism: How Some Chemical Facilities are Removing Danger to American Communities," Center for American Progress, April 2006.

3. BACKGROUND ON CHEMICAL SECURITY IN NJ

New Jersey's chemical industry is at risk. In addition to the 110 industrial facilities in our state that can pose catastrophic safety and health risks to workers and the public in the event of a release of an *extraordinarily hazardous substance*, there are approximately 242 plants, including petroleum and chemical storage and transfer facilities, that could endanger worker and community health and the environment in the event of a release of a *hazardous substance*.

In 2004, there were 4,521 private sector facilities that use or store at least 10,000 pounds of hazardous substances capable of harming worker health and safety and having damaging impacts on surrounding communities.¹³

Also in 2004, more than 1.7 billion pounds of “extraordinarily hazardous substances” were brought on-site or manufactured at our state's industrial facilities. These substances include chlorine, hydrofluoric acid, hydrogen chloride, phosgene, and ammonia¹⁴ – each of which can form a dangerous airborne toxic plume in certain circumstances.

Movement of hazardous substances by ships, trucks and rail cars also remains a significant vulnerability in New Jersey, which is a major transportation corridor. Recent oil spills in the Delaware, Passaic, and Arthur Kill rivers provide compelling evidence of this risk. Another example is the January 6, 2005, train derailment in South Carolina that released toxic chlorine vapor. Nine people died, 58 were hospitalized, and thousands of people within a mile of the accident were evacuated.¹⁵ Models of atmospheric dispersion indicate that chlorine transported and often stored in 90-ton rail tank cars can spread as far as 14 miles in urban settings and 25 miles in rural settings.¹⁶ According to the *New York Times*: “Ten months ago, government safety officials warned that more than half of the nation's 60,000 pressurized tank cars did not meet industry standards...”¹⁷ Many railway tank cars are covered with graffiti, showing that they are not secured from vandals, let alone terrorists.

THE CHANGING THREAT

In New Jersey and throughout the industrialized world, chemical incidents are almost always unintentional. However, the terrorist attacks of September 11, 2001, made it clear that like airplanes, chemical facilities can be “weaponized” by those intending to harm our citizens and our economy. The U.S. Government Accountability

¹³Analysis of Community Right to Know Survey and chemical inventory data for 2004. Information provided by NJDEP, 2005 in response to a WEC request.

¹⁴Analysis of Release and Pollution Prevention Reports for 2004. Information provided by NJDEP on November 7, 2005 in response to a WEC request.

¹⁵*Deadly Leak Underscores Concerns About Rail Safety*, by Walt Bogdanich and Christopher Drew, *New York Times*, January 9, 2005.

¹⁶*Homeland Security and the Private Sector*, Congressional Budget Office, December 2004.

¹⁷*Ibid*, *New York Times*.

Office, in its 2003 study of vulnerabilities and security preparedness at chemical facilities, concluded: “Chemical facilities may be attractive targets for terrorists intent on causing economic harm and loss of life.”¹⁸

After a toxic chemical gas release killed thousands of people in Bhopal, India, the company responsible, Union Carbide, blamed the release on sabotage by a disgruntled employee. In fact, several major safety systems were inadequately designed or maintained. Even at a well-run company, the best safety and security systems can fail.

A national survey of local unions at 125 facilities using high volumes of hazardous materials found significant deficiencies concerning worker training to prevent and respond to toxic catastrophes caused by a potential terrorist attack.¹⁹ The survey, conducted by the Paper, Allied-Industrial, Chemical and Energy Workers International Union (now part of the United Steelworkers) found that few companies involved their local unions or their hourly workforces in either assessing vulnerabilities or planning for emergencies or incident prevention.²⁰

Although evidence points clearly to chemical site vulnerability nationwide, no new federal laws to comprehensively address this issue have been enacted since September 11, 2001 – despite legislative proposals from then New Jersey Senator Jon Corzine, current Senators Frank Lautenberg and Robert Menendez, and Congressman Frank Pallone, as well as extensive media coverage of this issue. An editorial in the February 20, 2005, edition of the *New York Times* concluded that this gap in our laws exists because “Washington has caved to pressure from interest groups, like the chemical industry, that have fought increased security measures.”

¹⁸ Homeland Security: Voluntary Initiatives Are Under Way at Chemical Facilities, but the Extent of Security Preparedness is Unknown, US General Accounting Office, GAO-03-439, March 2003.

¹⁹ These conclusions reflect results from a study by the Paper, Allied-Industrial, Chemical and Energy Workers International Union.

²⁰ Ibid.

NEW JERSEY'S RESPONSE

New Jersey has undertaken efforts to address the risks of terrorism and protect our “critical infrastructure.”²¹ The *Domestic Security Preparedness Act of 2001* established joint anti-terrorism efforts between government and industry.²² The Act created an Infrastructure Advisory Committee (IAC) and 20 sector advisory groups to work with different state agencies. Among these advisory groups are those for the chemical and petroleum industries, wastewater and water treatment facilities, hospitals, and schools.

During the McGreevey Administration the Task Force and IAC advisory groups produced separate “best practices” for security in the chemical and oil industries. These best practices are supposedly baseline plans that can apply across an entire sector and focus on prevention, preparation, response, and recovery. For the chemical industry, these guidelines were developed with seven chemical company representatives and state and national trade organizations.²³ The chemical industry best practice guidelines are inadequate in scope, poorly written and edited, and extremely confusing.²⁴ Moreover, there was no input from front line workers, who, by virtue of their knowledge and experience, should have been involved in developing this document.

New Jersey's approach to chemical security has also emphasized more gates, guards, and “hardening” of plant perimeters. While such measures can be appropriate, they are insufficient. Much greater emphasis needs to be placed on ensuring “inherent,” or built-in, safety and security, such as substituting safer chemicals, reducing unnecessarily large inventories of hazardous substances, lowering operating pressures and temperatures, and using better backup shutdown procedures in the event of an emergency. Only these built-in solutions can ensure that a facility will not be able to release a toxic gas cloud into downwind communities.

Overall, until August 2005 the state's approach to chemical security under Democratic Governors McGreevey and Codey did not vary much from that of the Bush Administration, which relies on voluntary industry self-regulation. In fact, chemical industry trade associations almost led former DEP Commissioner Bradley Campbell to adopt their own industry's *Responsible Care Security Code of Management Practices* as the centerpiece of our state's policy to address terror risks. A resulting “Memorandum of Agreement (MOA)” would have put a state seal of approval on corporate self-regulation.²⁵ WEC – along with 67 labor, community, and environmental organizations – contended that this approach was the wrong way to protect us from terrorism or from the routine fires, explosions, spills, and releases caused by these industries.

²¹These efforts are documented in the Annual Reports by the New Jersey Domestic Security Preparedness Task Force, Peter C. Harvey, Chair, New Jersey Domestic Security Preparedness Task Force.

²² Ibid.

²³ Personal communication from Assistant Attorney General Larry O'Reilly.

²⁴See Current NJ Policies for Chemical Safety and Security, WEC, December 2, 2005

²⁵*Memorandum of Agreement Concerning Domestic Security Preparedness*, draft dated September 2003, NJ Department of Environmental Protection and industry trade associations.

RECENT DEVELOPMENTS

During the summer and fall of 2005, the Department of Environmental Protection's approach to chemical security changed for the better. DEP Commissioner Bradley Campbell decided to:

- Abandon his plan to implement a secret security deal with the chemical industry. As noted earlier, this pact did not adequately address promotion of safer design, operations, and maintenance to improve plant safety and security, did not promote a meaningful role for workers and their unions, and lacked any public input.
- Issue, with the Domestic Security Preparedness Task Force and Governor Codey, *Best Practice Standards* [our emphasis], ***not to be confused with the "best practices" discussed above***, the first such rules in the U.S. These include the requirement that 43 of NJ's potentially most hazardous chemical plants evaluate whether they can adopt "built-in" safety measures – called "inherently safer technology." Other provisions require management to conduct vulnerability assessments, forward *Occupational and Safety Health Administration* (OSHA) Process Safety Management Standard citations to DEP, and solicit input from workers and unions.
- Issue an Administrative Order that allows workers and union representatives to point out hazards while accompanying DEP staff on inspections at the 100 active facilities covered by the state *Toxic Catastrophe Prevention Act* (TCPA). The policy extends to employees and union representatives many of the rights already held by facility management. *This policy is the nation's first to involve workers in such community protection efforts.*

In addition, in October 2005 the Attorney General allowed to expire his proposed rule that would have weakened the *Open Public Records Act* and covered-up currently public information about toxic dangers. Moreover, DEP established a public "reading room" to allow controlled public access to documents about use of extraordinarily hazardous chemicals at New Jersey facilities.

These actions are important and are useful first steps, but remain insufficient. WEC's analysis of the so-called best practices are posted on our Web site at www.njwec.org. DEP's Best Practices and Best Practice Standards are at <http://www.nj.gov/dep/rpp/brp/brpPublicNotice.htm>.

Chemical industry trade associations have argued vociferously for a voluntary approach to chemical security. Some may contest this point, because of public statements made by industry in favor of federal legislation. But looking beneath the surface reveals that the industry supports federal laws that mandate *voluntary* approaches. However, voluntary compliance, at best, results in a patchwork of security measures that may or may not be adequate to protect the public from a chemical catastrophe.

4. RECOMMENDATIONS

WEC believes an effective approach to ensure chemical safety and hometown security must include all of the following critical elements:

- Mandatory and comprehensible requirements, not voluntary guidelines, unlike much of the current New Jersey “Best Practices” that were written by industry.
- Comprehensive assessment of vulnerabilities at all facilities covered by the Toxic Catastrophe Prevention and Discharge Prevention, Containment, and Control Programs. Today, too few facilities are subject to such evaluation.
- Assessment of both perimeter vulnerabilities, such as inadequate fencing or guarding, and potential chemical processing risks.
- Strict physical security standards where chemical hazards cannot be reduced or eliminated.
- Provisions to promote safer plant design and use of safer chemicals or processes. (This is sometimes called “inherently safer technology”). Currently only about 45 facilities of the 100 active TCPA facilities must evaluate the practicability of adopting safer alternative chemicals or processes) that can reduce or eliminate the risk of a major toxic gas release.
- Adequate staffing with enough trained workers to run a facility safely. Many facilities, particularly in the chemical industry, have “downsized” and are running with fewer experienced staff even as their production output has stayed the same or even increased. Needed maintenance, necessary for safety, is too often deferred.
- Meaningful participation by workers and their unions to help identify and prevent vulnerabilities. Workers understand just where an intruder might enter a plant, whether or not security guards are doing their job, the location of volatile materials, whether the facility is sufficiently staffed with trained personnel, if backup control systems properly operate, and other risks. Workers also are often required to respond during emergencies, and in doing so, function as a critical line of defense against disaster.
- Provisions for the public “right to know,” including access to information and community notification about toxic threats and preventive measures. This information helps New Jersey prevent, prepare for, and respond to chemical accidents, whether intentionally-caused or the far more frequent and continuing “routine” accidents, spills, fires, and explosions.
- Sufficient staff and resources for the New Jersey Department of Environmental Protection and other government agencies to ensure effective administration and enforcement of such requirements.

During his campaign for Governor, Jon Corzine said, “Without basic safety and security, everything else we care about is at risk.” WEC thanks Governor Corzine for his pledge to put *Safety and Security First* and urges him to act promptly to ensure chemical safety and hometown security.

5. METHODOLOGY

The findings in this report are based on analysis of state and federal Risk Management Plans in government reading rooms. WEC analyzed RMPs filed under two different laws:

1. NJ DEP's list of facilities regulated *only* by the *Toxic Catastrophe Prevention Act* (TCPA), and NOT by federal EPA. TCPA requires regulated facilities to develop and submit for public disclosure Risk Management Plans (RMPs).²⁶

Among other elements, RMPs are required to include

- ☞ an "offsite consequence analysis," which estimates the community impact of "worst-case scenario" and "alternative scenario" (more likely) chemical releases;
- ☞ five-year history of accidental chemical releases;
- ☞ a prevention program;
- ☞ and emergency response program.

2. U.S. EPA's list of facilities regulated by the *Clean Air Act* Section 112 (r), which covers a similar universe of facilities as TCPA, though slightly different. CAA 112 (r) also requires regulated facilities to develop and submit for public disclosure RMPs. For a list of substances regulated by CAA 112 (r), see EPA, Office of Solid Waste and Emergency Response. *List of Lists: Consolidated List of Chemicals Subject to the Emergency Planning and Community Right-To-Know Act (EPCRA) and Section 112(r) of the Clean Air Act: CEPCRA Section 302 Extremely Hazardous Substances*. <http://www.epa.gov/ceppo/pubs/title3.pdf>.

²⁶ A list of chemicals regulated by the NJ TCPA is available from the NJ DEP web site (www.state.nj.us/dep/enforcement/relprev/tcpa/ehlist.html).

APPENDIX A: DANGERS OF SELECTED HAZARDOUS SUBSTANCES USED IN NEW JERSEY*

ACRYLONITRILE

Acrylonitrile is a flammable and reactive liquid, clear or slightly yellowish in color, with a faint odor. It is used to make synthetic fibers and polymers. Acute exposure irritates the eyes, nose, throat and lungs. High exposure levels can cause weakness, headache, confusion, nausea, vomiting, and collapse. At the highest exposure levels fluid build-up in the lungs (pulmonary edema) may lead to death. Chronic exposure may interfere with the thyroid gland. Acrylonitrile is a probable human carcinogen.

AMMONIA (ANHYDROUS)

Anhydrous ammonia is a corrosive colorless gas with a strong odor. It is used in refrigeration and in making fertilizer, plastics, dyes, textiles, detergents, and pesticides. Acute ammonia gas exposure can irritate the skin; burn the eyes, causing temporary or permanent blindness; and cause headaches, nausea, and vomiting. High levels can cause fluid in the respiratory system (pulmonary or laryngeal edema), which may lead to death. Chronic exposure damages the lungs; repeated exposure can lead to bronchitis with coughing or shortness of breath.

CHLORINE

Chlorine is a greenish-yellow gas with a strong, irritating odor. It is used in making other chemicals, as a disinfectant, in bleaching, and for purifying water and sewage. Acute exposure can severely burn the eyes and skin, causing permanent damage, and may cause throat irritation, tearing, coughing, nose bleeds, chest pain, fluid build-up in the lungs (pulmonary edema), and death. Chronic exposure can damage the teeth, and irritate the lungs, causing bronchitis, coughing, and shortness of breath. A single high exposure can permanently damage the lungs.

CHLOROFORM

Chloroform is a colorless liquid used in making dyes, drugs, and pesticides. Acute exposure to chloroform can irritate and burn the skin, eyes, nose, and throat, and cause dizziness, lightheadedness, headache, confusion, and irregular heartbeat which may lead to death. Chloroform probably causes cancer and may cause birth defects. Chronic chloroform exposure can damage the skin, liver, kidneys, and nervous system.

EPICHLOROHYDRIN

Epichlorohydrin is a reactive colorless liquid with a slightly irritating, chloroform-like odor. It is used to make plastics, resins, and glycerin. Acute exposure to epichlorohydrin vapor irritates the eyes, nose, bronchial tubes, and lungs. High levels can chemically burn the lungs or cause dangerous fluid build-up, which may lead to death. Eye contact may cause permanent damage, and skin contact can cause painful blistering which may be delayed in onset for minutes or hours. Chronic exposure can damage the kidneys, liver, and lungs. Epichlorohydrin is a probable human carcinogen and may decrease fertility in males.

ETHYLENE OXIDE

Ethylene oxide is a colorless gas that is highly flammable, reactive, and explosive. It is used to make antifreeze, polyesters, and detergents, and is used for industrial sterilization. Acute exposure can irritate the eyes, skin, nose, throat, and lungs, and may cause shortness of breath, headache, nausea, vomiting, diarrhea, drowsiness, weakness, and loss of muscle control. Higher exposure levels may cause loss of consciousness, fluid in the lungs (pulmonary edema), and death. Chronic exposure to ethylene oxide may cause cancer and birth defects, as well as damage to the liver, kidneys, and nervous system.

FORMALDEHYDE

Formaldehyde is a flammable, colorless gas with a pungent, suffocating odor. It is used in manufacturing plastics and other chemicals, such as adhesive resins in particleboard, plywood, foam insulation, and other products. Acute exposure irritates and burns the skin, eyes, nose, mouth, and throat. Higher levels can cause a build-up of fluid in the lungs (pulmonary edema) or spasm in the windpipe, either of which may be fatal. Chronic exposure may cause both an asthma-like allergy and bronchitis with symptoms of coughing and shortness of breath. Formaldehyde causes cancer of the nasal passages in animals and is considered a probable human carcinogen.

HYDROGEN CHLORIDE (HYDROCHLORIC ACID)

Hydrogen chloride is a corrosive colorless to slightly yellow gas with a strong odor. It is used in metal processing, analytical chemistry, and in making other chemicals. Acute exposure to hydrogen chloride can cause severe burns of the skin and eyes, leading to permanent damage and blindness. Breathing hydrogen chloride vapor irritates the mouth, nose, throat, and lungs, causing coughing, shortness of breath, fluid build-up in the lungs (pulmonary edema), and possibly death. Chronic exposure damages the lungs and may erode the teeth.

HYDROGEN FLUORIDE (HYDROFLUORIC ACID)

Hydrogen fluoride is a corrosive colorless fuming liquid or gas with a strong irritating odor. It is used in etching glass and in making other chemicals, including gasoline. Breathing the vapor causes extreme respiratory irritation (with cough, fever, chills, and tightness) that may be fatal. Contact can severely burn the skin and eyes, resulting in permanent eye damage or blindness. Long-term exposure may damage the liver and kidneys, and causes fluorosis, with symptoms of weight loss, malaise, anemia, and osteosclerosis.

SULFUR TRIOXIDE

Sulfur trioxide is a corrosive colorless liquid that fumes in the air forming sulfuric acid vapor or mist. Its health effects in the air are essentially those of sulfuric acid (and are similar to sulfur dioxide and to oleum). Sulfur trioxide

vapor can severely irritate and burn the skin, eyes, throat, and lungs. Eye damage can include blindness. Breathing the vapor can lead to choking, spasm, and pulmonary edema. Exposure can cause bronchitis, emphysema, and permanent lung damage.

SULFURIC ACID

Sulfuric acid is an oily liquid that is highly corrosive. It is used in fertilizers, chemicals, dyes, petroleum refining, etching and analytical chemistry, and in making iron, steel, and industrial explosives. Breathing sulfuric acid mist can irritate the lungs; high levels can cause death through a dangerous build-up of fluid in the lungs (pulmonary edema). Contact can severely burn the skin and eyes. Repeat exposure can cause erosion and pitting of the teeth, stomach upset, nose bleeds, tearing of the eyes, emphysema, and bronchitis.

THIONYL CHLORIDE

Thionyl chloride is a colorless or pale yellow to red liquid with a pungent odor. It is used in manufacturing organic chemicals, as a solvent in lithium batteries, and in making pesticides. Thionyl chloride may react or explode upon contact with other substances. It is a corrosive chemical that can severely irritate or burn the skin and eyes. Breathing thionyl chloride vapors can irritate the nose, throat, and lungs, and at higher levels can cause fluid to build up in the lungs (pulmonary edema), with severe shortness of breath and potentially death.

TITANIUM TETRACHLORIDE

Titanium tetrachloride is a colorless to light yellow liquid that has a penetrating acid odor. It is used to make titanium pigments, iridescent glass, artificial pearls, and as a catalyst in polymerization. Titanium tetrachloride is highly irritating to the skin, eyes, and mucous membranes. Acute exposure can burn the skin, eyes, throat, and lungs. Chronic exposure can lead to chronic bronchitis, wheezing, and build-up of fluid in the lungs.

TOLUENE-2,4-DIISOCYANATE

Toluene-2,4-Diisocyanate is a colorless to pale yellow liquid with a strong fruity odor. It is used to make polyurethane foams, elastomers, and coatings. Contact can irritate and burn the eyes and skin, and breathing vapor can irritate the nose, throat, and lungs, leading to coughing, chest tightness, and shortness of breath. High levels can lead to fluid in the lungs (pulmonary edema). Chronic exposure may cause concentration and memory problems. Toluene-2,4-Diisocyanate is a probable carcinogen.

VINYL ACETATE

Vinyl acetate is a flammable and reactive colorless liquid with a sharp sweet odor. It is used in making polyvinyl resins. Acute exposure to vinyl acetate can irritate the eyes, nose, throat, and skin, and cause shortness of breath. High levels can cause fatigue, irritability and dizziness. Prolonged contact can blister and burn the skin.

* Health hazard information sources include:

- New Jersey *Hazardous Substance Fact Sheets*
(www.state.nj.us/health/eoh/rtkweb/rtkhsfs.htm)
- National Library of Medicine Hazardous Substance Data Bank
(toxnet.nlm.nih.gov)
- Environmental Protection Agency *Hazardous Substance Fact Sheets*
(www.epa.gov/enviro/html/emci/chemref/index.html)

**APPENDIX B: LIST OF FACILITIES REGULATED UNDER THE
NEW JERSEY TOXIC CATASTROPHE PREVENTION ACT BY
THE NJ DEP**

This list is available upon request in hard copy format. It is provided by the NJ Department of Environmental Protection, is current as of May 3, 2006 and is in order by county.

A management contact person and their telephone number is included for each facility listed.